CHOCOLATTA

"The Ready-to-use Chocolate."

TRADE MARK

Made from the Finest Chocolate and Milk

PREPARED INSTANTLY

BY

ADDING BOILING WATER ONLY

A WELL BALANCED FOOD BEVERAGE,
CONTAINING

Fat
Carbohydrates
Protein

All in a convenient form. A very digestible product of high food value.

A trial will delight you

BRITISH OWNED AND MADE IN CANADA

SPECIAL PRICES TO INSTITUTIONS
LIBERAL SAMPLES TO PHYSICIANS AND NURSES
WRITE FOR BOOKLET

The Nutrient Food Co.

Canadian Office, 19 Alice Street, Toronto, Canada

The
Public Health Journal
TORONTO, CANADA.
VOL. VII. NOVEMBER, 1916 NO. 11

THE DEFECTIVE IMMIGRANT

C. K. CLARKE, M. D., LL.D.

A FEW YEARS ago I was foolhardy enough to write a series of articles on the Defective and Insane Immigrant, and soon found myself in the centre of an unpleasant controversy, as the facts and figures presented did not appeal to practical politicians who were anxious to cultivate the vote of the immigrant who had recently arrived. That was not a new experience, as the average politician is generally apt to consider the advantage of the moment, rather than the future welfare of the community. However, the significance, and the experience gained in statistics presented were of undoubted what has been a comparatively new field to me has made clear the fact that the conclusions drawn in my former articles were correct. For the greater part of my life I have been engaged in the care and the treatment of the insane, during a portion of the time devoting special attention to the feebleminded and criminal clasess. Leaving the asylum service in 1911 it was possible to make a special survey of the defectives in the community of Toronto, by establishing a special Psychiatric Clinic at the Toronto General Hospital, where the schools, the Juvenile Court, the charitable organizations and private individuals send suspected cases of mental disease and defect for examination. This Clinic is directly under the management of the Hospital Social Service Department and is so constituted that it is not difficult to study the individuals coming before us in a thorough manner, both at home and in the Clinic. No less than eleven hundred and twenty-seven individuals have been brought to us already, so that we are now reaching a stage where it is possible to draw some conclusions regarding the mentality of many of the immigrants who have come to Toronto during recent years, and to estimate the character of the immigration. Of course, it may be urged that it is too late to lock the door now that the damage is done, but it is not too late to make adequate provision for the future, when conditions in the Old World, as the result of the war, may make the dumping of the defective and diseased classes on Canadian soil more desirable than ever from the continental standpoint. In making a brief analysis of the figures at hand, it becomes apparent at once that inspection at the ports of entrance has been a comparative failure, and numbers of children whose defects should have been apparent to the veriest tyro in feeblemindedness or psychiatry, have passed the so-called tests with success, and the country has been forced to assume the maintenance of an unnecessary burden. If the question really resolves itself, as has been so often suggested, into one of practical politics and the exigencies of party rule, the sooner the people demand a different state of affairs the better for the community.

To deal with some of the bare facts at our disposal in regard to the 1,127 cases referred to, 46 per cent. were Canadian born, many, of course, the children of Old World parents, and 54 per cent. recent arrivals in Canada. After re-reading an article written by me in 1907, an article which will be quoted from—the proportion is just what was to be expected—the foreign patients far outnumbering the Canadians. One of the striking facts is that in connection with the immigration

from Great Britain, which supplied more than 31 per cent. of the cases under observation. This is easily accounted for, as the children very largely came from parents of the most defective types who had left the slum centres in British cities. The Russian Jew, too, who has lived under the most trying and unhappy conditions and who is of strongly neurotic type, contributed far more than his proportion to the total—or, to speak accurately, a little more than 6 per cent. A careful study of the types involved makes it plain that we are deliberately laying a foundation on which it will be impossible to raise a stable superstructure. These defectives do not receive the benefits supposed to result when weaklings are transplanted to the virgin soil of a new world. As a matter of fact, the majority deliberately seek the same kind of surroundings as those which they left in the Old World. Toronto can no longer boast that it is without slum centres; indeed, a careful study of home conditions in many of the cases observed has revealed a state of affairs simply appalling.* A reproduction of some of these home surroundings at a recent exhibition in Toronto shocked the community and evoked much bitter criticism, but it was felt that Mr. Squeer's practical methods of education might excite an interest otherwise impossible in a community which is reluctant to have its sore spots revealed. Fortunately, it is a community that will do its duty when it is finally aroused to its responsibilities. No less than 453 of the cases studied were sent from the Juvenile Court, the majority of whom were distinctly feebleminded, if one takes a broad conception of the term "feeblemindedness." Practically all of these children were not properly cared for and the greater proportion will prove potential criminals. How many more children appeared in the Juvenile Court who were below the normal line, we have no means of determining, but the number was no doubt large. As the machinery in Ontario for the treatment and care of the feebleminded is inadequate and hopelessly hampered by provincial and municipal politics, the possibilities for evil in these 453 children, a very large proportion of whom are Old World defectives, are great. Many of them have already committed anti-social acts, and the classes of prostitutes and thieves will undoubtedly be largely recruited from them. Of course, the Old World defective will always be found prominent in the thickly populated centres, as the parents naturally (generally defective themselves) gravitate to such places, so in a sense what is common in Toronto may be comparatively uncommon in rural communities. This is by no means certain, though, as it has been found that a large number of defective boys have been placed with farmers by various organizations, which exercise a slipshod scrutiny of the heredity, capacity and antecedents of those they import. Their idea of finding better homes for their wards is admirable, no doubt, but there is no reason why a new country should have imposed on it a double liability and responsibility at a critical period of its development.

Then, again, when considering the figures given here, it must be remembered that they only tell a part of the story, because, as already stated, to them should be added a decidedly large proportion of the parents. It is a matter of common observation in the Clinic that a study of the parents should never be forgotten in working out the evolution of the defective child. Indeed, this is the most interesting part of the study.

A large percentage of the 1,127 cases were easily classified under the feebleminded heading, but it is surprising what a number of children had to be placed in the insane column. Some were both defective and insane, but many had a distinct psychosis, generally coming in the classes of Dementia Praecox. Several children were suffering from juvenile general paresis, as was to be expected when the prevalence of syphilis among the Old World types is considered. It is only a matter of time when the question of submitting certain city types of immigrants to Wasserman tests will have to be threshed out and practical methods devised to obviate the condition of affairs that has arisen during late years.

When at the head of Toronto Asylum in 1908 I wrote: "A striking feature of the situation is the preponderance of the English defective in our admissions, and the cause of this is the wholesale clearing

out of the slums of English cities. Toronto may be a Mecca for this class, but it is evident that other cities have suffered as well. To show how startling is the preponderance of the foreign born among the insane of the country as represented by the admissions to Toronto Asylum, a very brief study is necessary. It is not a new question, and yet one that the persons who thunder for hordes of immigrants to swell our population would do well to regard. Of course, I am aware "that figures unbased as facts are an image for fools to hoard or to circulate," but by a careful study of the past we learn that Toronto has always suffered. It may be argued that we draw our population from the centres in which the foreign-born are in greater proportion than in the rural districts, but such was not always the case, and in early days Toronto Asylum served practically the whole province. In 1854 of the first 1,000 patients admitted:

Irish	434
English	180
Scotch	146
Canadian	162
Others	78
	1,000

Even at that date the native-born population outnumbered the foreign. I mention these figures merely to prove the fact known to those of us who have studied psychiatry, that no proper inspection of immigrants has ever been made.

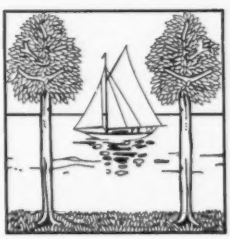
Quoting from a report by Dr. Workman in 1861: "The table of nativities of the patients admitted in the last six years shows that the three nationalities, Irish, Scotch, English, with an aggregate of 404,313 in the population of the province, have sent in 645 patients, whilst the Canadian nationality, amounting to 902,879, has sent in only 266; in other words, a part of the provincial population, equal to 29 per cent., whilst another part, the native Canadian, equal to nearly 65 per cent. in the provincial population, has contributed only about 27 per cent. to the asylum population. If the native Canadian population sent in the same proportion as the Irish, English and Scotch together, they would have furnished 1,141 instead of 266. But taking into consideration the fact that the population of foreign birth is almost always of adult age, and that the native Canadians includes those under adult age, the proportion of which is almost 40 per cent. in the whole population, we should find that a fair proportion of asylum admissions for native Canadians would be 865, whereas they have sent in only 30 per cent. of this number, or in other words the Irish, Scotch and English sent in ten to three as compared with native Canadians. It appears manifest, that if we have much or an undue share of insanity in Western Canada, it can by no means be said that it is of home production. In this respect, as in our material products, we have been very large importers, for about two-thirds of our asylum inmates have been natives of the United Kingdom, and less than one-third of Canada. It certainly, then, approximates to swaggering on the part of the natives of the British Isles when they reproach Canadians as a people more prone to insanity than themselves, especially when we find that they contribute only about 29 per cent. of the population." The disproportion was really greater than Dr. Workman made it, because a large number of children must have been included in the foreign-born, and due allowance should have been made.

The point, though, is that Canada has always paid the price for unrestricted immigration.

Canada has developed slowly and healthily, and has had time to assimilate even some of the worst elements which have come to her, but the forced feeding she has been subjected to in former years will have its effect; in fact, in the urban centres these effects are already noticeable.

A study of the patients attending the various special Clinics at the General Hospital soon tells the tale of what effect carelessly guarded immigration has done for Toronto. The opinions expressed will not suit many of the opportunists who believe with Rudyard Kipling's statement that Canada's greatest need is to be supplied "by pumping in the population." Even those who are believers in his remedies for ills, real or supposed, would, we feel certain, add to his alliterative phrase, the

suggestions that the supply pipe should not be allowed to tap streams reeking with insanity, crime and degeneracy. If the figures presented to-day mean anything, it is that when the stream of immigration once more sets in, as it undoubtedly will after the termination of the war, when poverty, misery and the other evils following in the wake of the stupendous conflict make the sufferers turn their eyes to the New World, then we must do our duty firmly and efficiently. If we are to build a great nation, we must, as far as possible, use the best of materials, not the worst. It is all very well to idealize the potentiality of numbers, but those of us who have been digging in the graveyards of family histories for years and learning what is the cost of the defective to the community, realize that after all quality rather than quantity should be the watchword. No one can deny this, and no matter of what political complexion the administration is, there should be no interference with the demands of efficiency in the selection of officials of the Immigration Department. The inspectors should be competent men specially trained in psychiatry, with a broad experience and knowledge of mental defect and disease; men who are keenly alive to the demands and responsibilities of their office and the importance of their decisions. The suspected undesirables should be detained just as long as necessary to enable the examiner to arrive at an intelligent decision, in each case, as so much depends on their decision. In other words, the inspection of immigrants should be lifted out of the slough of practical politics and placed in the hands of scientific men whose only interest is that of giving honest service to their country. This would, of course, cost something, but money so spent would be saved a thousand times over by the better standard of immigration admitted to our shores. The present is the opportune moment for such a reconstruction of policy, and it is to be hoped that even the politicians will recognize the fact that such a line of action would bring glory to the "powers that be."



PRESIDENTIAL ADDRESS

By Dr. P. H. BRYCE (Hon. President).

Sir Lomer, Your Honor, Monseigneur,
Ladies and Gentlemen:

At the request of my friend, Dr. J. D. Page, the Vice-President, whose official duty it is to preside over this convention in the enforced absence of our President, Dr. C. J. Hastings of Toronto, I have as Honorary President, undertaken for the evening the duties of the President of the Canadian Public Health Association.

In so doing I have to express my sense of the pleasure it gives me in having the opportunity of speaking before so distinguished an audience in the historic Capital of Canada. No Canadian, whatever his nationality, can fail to come under the spell of this ancient city, founded securely on the summit of the world-old rock, whose base is laved by the waters of earth's noblest river: the place which knew Jacques Cartier and where Champlain planted the cross and fleur-de-lis in honor of God and his King. We see in Quebec the city which is the cradle of the Canadian nation, whose infancy was guarded through war clouds against the attacks of les sauvages, by the mailed warriors of Louis le Grand, and the courageous bourgeois from LaRochelle, Normandy and the plains of Picardy, where in fraternal amity their descendants are fighting for liberty, equality and fraternity, as comrades of those, who through their arms secured the right to assist in making our Canada, the land of the Maple, the home of those two races, who in modern times have best taught the world not only the graces of chivalry, but also the triumphs of peace and that righteousness which most exalts a nation.

I am sure that you will regret with me the fact that owing to the ill-health of our esteemed president, Dr. C. J. Hastings, Medical Officer of Health of Toronto, we are to be deprived not only of the presence of his delightful personality, which makes him a most admirable chairman, but also of his address on topics of the greatest public moment and of the greatest interest to the members of this Association. Dr. Hastings has brought into the work of Public Health administrative qualities of an unusually high order, and has further adopted in the evolution of the scientific side the most practical modern ideas and obtained results in every branch of his work which in some particulars are quite remarkable. We may then very well not only regret his presence with us, but also extend to him our personal sympathies and our best wishes for his speedy restoration to his wonted health.

It has fallen to me as honorary president to attempt to take the place on the programme left vacant. I have accepted the duty since, as an honorary president who has long passed all the degrees of the Order, I am supposed to be a sort of Jove, looking down from high Olympus to observe, to criticize and to correct the doings of all the minor deities. If then, ladies and gentlemen, Jove for the moment condescends to come down and dwell with mortals for a short time, while receiving honors, he also exposes himself to the lapses of mortals. I beseech you, therefore, as for a moment a fellow mortal to remember that if through some unlucky accident Jove should nod, there is precedent for it in the annals of the meetings in the Olympian halls of long ago.

Many present know that some six years ago at a meeting of Public Health Officers in Ottawa it was thought well with the ever growing importance of Canadian problems that the many workers in Public Health, scattered throughout the various provinces, should have some common meeting ground whereon to discuss those public matters in which they were so directly interested; and so it happened that in December of 1911 the first annual convention of the Canadian Public Health Association was held in Montreal under the patronage of His Royal Highness the Duke of Connaught, which meeting was made further notable by the presence of Sir Robert Borden, Sir Lomer Gouin, Premier of Quebec, the Hon. Mr. Burrell and other important personages. The annual meetings have since been held in Toronto, Regina, Toronto, and now in Quebec, there being no meeting in 1914 owing to

the sudden outbreak of war. The proceedings of these several meetings, published in *The Public Health Journal*, a journal established at the same time as the association, indicate what has been done for Public Health in Canada during the period. Perhaps it has not been much more than to "Keep the Home Fires Burning"; but even this has been something in these days, when all our attention is directed to our boys across the sea. That we have not wholly failed to cultivate a public interest in health problems is seen in the fact that we have on the programme a Lieutenant-Governor, a Premier, a Mayor and two medical members of the Federal Parliament.

But though this is but our fourth meeting it will not be forgotten that for forty years the enthusiasts in Public Health have been preaching its gospel in America, since in 1872 five physicians of the United States met in Atlantic City and organized the American Public Health Association, which in 1884 opened its doors to Canada, nine years later broadened them again to receive Mexico, and ten years later Cuba was also admitted, thereby co-ordinating all official and individual health efforts on the North American continent. Many here know what has been accomplished during the forty years; but it may not be without interest to others to recall a few principal events in Public Health. In 1866 the cause of no communicable disease was known, since the germ theory of disease, though often imagined, had not been demonstrated, and ten years later Bastian, the greatest of London's physiologists, advocated experimentally his beliefs in the spontaneous origin of disease germs, although Louis Pasteur had with others demonstrated the presence of bacilli in the disease of anthrax in sheep and the vibrios of chicken cholera in fowls. From 1867 Lister believing that Pasteur's germ theory with regard to the ferments in beer and wine bore directly upon the infection of wounds had begun his work, based upon the asepticism of wounds, and by 1881, when Pasteur victoriously demonstrated that not only did germs cause anthrax, but that he could attenuate them so that animals could be vaccinated against this most virulent disease, Prof. Lister had reduced in the wards of Edinburgh Infirmary the mortality in surgical operations from 75 per cent. to less than 15 per cent. Antiseptic surgery was, however, simply the adjunct of the scientific laboratory work, which followed in 1882 with Koch's discovery of the bacillus of tuberculosis, and in 1884 of the bacillus of cholera. In 1886 Laveran showed us the haematozoon of malaria, Leoffler the bacillus of diphtheria and Behring produced its antitoxin in 1887, while the germ of ubiquitous typhoid yielded to Klebs its secret at the same time. Great, however, as was the wonder of le grand maitre's discovery in 1882 regarding vaccination in animals, the world did not grasp the meaning of these results of his divine imagination until in 1885 he vaccinated Joseph Meister, the boy with fifteen wounds from the bites of a rabid dog, with the attenuated virus from the spinal cord of an animal dying from hydrophobia. The Czar of Russia, a country where rabid wolves terrorized the people, and the Sultan of Turkey showed their appreciation of Pasteur's work of world-wide benefits by subscribing along with his grateful countrymen many thousand francs for the erection and endowing of the Pasteur Institute, devoted henceforward forever to education in the science of bacteriology, which Prof. Grancher at its opening in 1897 said Pasteur had discovered, and to practical research work in every field of biological science bearing upon health, agriculture and industry. This was almost the first recognition by rulers and governments that *salus populi est suprema lex*, and that it is actually an elementary duty as well as function of government, although as an outcome of industrial, chemical and pathological research in the twenty universities of Germany during the twenty years before discoveries had been made greatly to the benefit of the health of mankind.

Turning to Canada in those early days of science we see only one university in any sense developing the science of Medicine, not as yet recognized, as having any direct relation to government; but in 1882 Ontario took the first step forward in permanently establishing by law a Provincial Board of Health with broad and well

defined powers, which became the model for Boards in other provinces, Quebec following in 1886, the year after the historic fatal epidemic of smallpox, which caused 7,000 deaths in a single year in the province. Since that time many remarkable results have been attained; the contagious deaths of former years having been reduced in many centres to less than half their previous rate, while many laboratories, both provincial and municipal, have done much to assist executive officers in their work in the matter of water supplies, sewage disposal, milk supplies and the control of contagious diseases. Different universities have established courses for the education of physicians and engineers in Public Health work. Though perhaps but little experimental work has been done here, yet we have well illustrated the practical application of discoveries by what has been accomplished during the stress of war. Diseases hitherto the dread of armies in the field, cholera, smallpox, typhoid and tetanus have been prevented and the mortality from septic wounds has been reduced ever since, fifteen years ago, to a degree hitherto not dreamed of. Tennyson in Locksley Hall speaks of man as :

"Heir of all the Ages
In the foremost fyles of time,"

while the discoveries of science, in the arts, industries and in transportation have transformed the world in the matter of human comforts and the amenities of civilization. Yet to nothing may mankind so logically sing paeans for benefits received as to the progress in the medical sciences and especially in the field of preventive medicine. We now know the causes of disease and the means of their prevention. We know the curative and preventive qualities of sunlight; we know what pure air introduced through ventilation does to make homes happy and healthy. Ships cross the ocean with the almost complete absence of diseases and deaths, millions travel by train and in relatively pure air, while in the matter of our food and drinks a thousand precautions are taken to prevent the spread of diseases through these agencies.

But while speaking broadly, we can say this much has been accomplished and that a knowledge of what to do has been learned, yet we in Canada cannot be said to have done more than largely follow, where scientists of other countries have led us. Perhaps in the practical application of science we have done as much as many others; but in the search after scientific truth Canada has like Great Britain little reason for self-gratulation and very great need for self-examination. We may fairly ask, having universities, several of which are amongst the largest in the world in numbers, why no single discovery in science of high importance has been given to the world from them? Why has it been that in agriculture the Federal Governments have spent millions in experimental farms, while in the science of Public Health, not a single Federal research laboratory as such exists. Some provinces, indeed, my own old province, has done something, and is doing more; but we in the Federal departments have no laboratory to which we can go to carry on a single investigation. As it is exactly forty years since as a graduate just leaving Toronto University, I was appointed to the Chair of Science in the newly organized Agricultural College in Guelph, and as on working to the limit of my ability for thirty-five years in Public Health work, I think I am entitled to attempt a diagnosis of the situation. At that time we were as a nation very young, and indeed as a province quite undeveloped. Even common school education was by no means universal; but what existed there was of the old routine type, with the classical and literary features attached in the superior schools. We have seen that science was till then empirical in many branches, and most so in Medicine. Theological belief in disease as the proof of the anger of the Deity was general, and for man interference to prevent it seemed sacrilege. But inevitably in a young country, so sparsely populated, problems of material development necessarily predominated. Immigrants were demanded, but "Old" Canada was already settled; we had no place to put them, so railroads had to be built. Large sums of money were needed and were sometimes hard to get. When the railroads were built and immigrants began

to come, many looked upon them as a means rather of material advantage to themselves instead of becoming their protectors and acting as apostles of Canadian citizenship and for the promotion of their social and moral welfare. We had, as a matter of fact, not been educated to think along scientific and sociological lines from childhood up. I have examined curricula of our public schools and it is melancholy to see how little even yet the child mind is brought to examine natural objects through scientific eyes. His later mind is but the expression of ideas gathered from childhood up, unless taught while young how to know scientifically. Sir Oliver Lodge before the Educational Conference in London last winter, and Prof. Evans before the British Association for the Advancement of Science last month, said that the people of England through the lack of teaching experimental science in the public schools were lamentably ignorant of the basis of knowledge upon which a modern people can think and work correctly or develop effectively in the great practical affairs which save life and make a people great. If this is true in England it is probably yet more true in Canada. Without a knowledge of scientific methods, legislators cannot logically be impressed with the great advances which through such exact knowledge become possible to every young man or woman in effective work, nor can they appreciate the untold advantages to health, which a basic knowledge of science means in the development of the child from infancy to youth and in his maintenance in health and usefulness in later life.

But I am to-night only expected to illustrate what this Public Health meeting stands for. It serves to illustrate to the people of Canada what has been accomplished; it desires to show in the problems to be discussed on the programme what it deems necessary and essential for investigation and, if possible, solution, and it seeks to lead the Canadian public to an appreciation of the bearing of these problems on their personal, family and national well-being. It further demands that as Canada has shown that she has attained her majority through sending her hundreds of thousands of soldiers not only to fight for her protection and salvation, but also to take her part in the battles of the Empire and of the Allies for the right to live in freedom and to develop their own ideas of liberty, justice and humanity, so shall the Canadian people and their educational and scientific teachers and leaders be placed in a position to take a part in the evolution of experimental science through associating themselves with the great minds of all lands. The divine Pasteur, amongst the greatest minds of the last century, with an absorbing passion for his fatherland France, in urging his colleagues and students to work, saying "laborare onare," demanded that they should strive in the field of science for the glory of France; that if science knows no country and no international boundaries, yet it is nevertheless essential for its development that every scientist should have a country of his own to work for and make glorious as a leader of other nations. In these days of a new birth, the Canadian Public Health Association claims as much for Canada, and urges that in this new field of scientific endeavor she may become as great and glorious as her soldiers have made her on the fields of France, red with the blood of her sons.

IMPORTANCE OF HOUSING AND LODGING-HOUSE INSPECTION*

By J. S. SCHOALES, Chief of Division of Housing and Industrial Hygiene, Department of Public Health, Toronto.

IN the field of preventive medicine there is no problem that I know of to which that old aphorism "Physical Health is the basis of Mental Health," more aptly applies, or is better exemplified than that of housing, or one that exerts such an influence on the generations. Housing is essentially a public health problem. Its influence is far reaching. It affects not only the individual and the family, but the whole community from a physical, moral and social stand-point.

Most cases of social disorder originate in the home. It is in the home where the habits and morals of individuals are first formed, and where life is influenced to a large extent by the environments surrounding the home.

No government can with impunity suffer bad housing conditions. It is the duty of a municipality to study all the harmful influences which affect life and health. See that the houses in which a large proportion of the people live are clean, sanitary and not overcrowded. Make earnest effort to ameliorate or remove existing evils, and a government that is indifferent and fails in this respect, lacks the fundamental principle of good government.

The nations most civilized, as one writer has said, are those who have the best homes, the best laws, government, the most advanced in science and art — the purest religion, the soundest morals and highest minds.

Good housing is more essential to the building up of physically sound healthy bodies than drugs or medicines, which are indispensable at times of illness. The life and well being of individuals, the development in culture and social condition are dependent largely on housing conditions, and these must be determined by a searching investigation first of all. A physician when called to attend a sick person will first diagnose the case, and then give a prescription so as to alleviate sufferers—and so of necessity there must be a diagnosis of the homes and the prescription given in order to safeguard the health of the public.

A fundamental feature of all social relations is the fact that persons in families in cities, towns, and country, have, and use, many things in common. Each individual belongs to some family or group, consequently groups are knowns as communities. Of all communities the most fundamental, the simplest, the most important, is the family, or household, in which the various members share a common shelter or common table and fireside.

As clothing is to the body, so is the home to the family. The chief function of clothing is to protect the body from cold by maintaining about the skin temperature conditions. Of course in hot or tropical countries, clothing is of least importance except as a covering for decency's sake. The housing problem is very similar, for the principal function of the house is likewise to furnish for the family protection against cold, rain storms, etc. The house is in fact a kind of outer clothing or protective shell, designed not only for the individual, but for the family, and as we have for the public, hotels, apartment-houses and lodging-houses.

There was a time when there were no such things as houses in the world for the people to live in, for during the early stages of the world men lived in caves, and for very many centuries caves were the habitation of the people. The first houses were built during what was called the bronze age—some 3,000 years before Christ. As you know, there were three ages in connection with the world's progress. First the stone age, after that came the bronze age, and then followed the iron

* Read before the Institute of Sanitary Instructions, April 19th, 1916, Department of Public Health, Toronto.

age. It was during the bronze age that they began to cut down trees, hew stones and commenced to build houses. Then cities were built and kingdoms founded—in other words, civilization began in this age.

The world since then progressed in civilization, although some continued to live in caves and rude huts.

I might mention that the first house in Toronto was a log one of two rooms, built in 1793, east of the old Garrison Creek (R. L.). That was a small beginning, the same as all cities. The first inhabitants or pioneers build houses to suit their conveniences. These in time gave place to others, and so on according as population increases—the older houses became the dwellings of the less prosperous, so that in almost any city one may visit, a portion of the population will be found living in old buildings and insanitary houses, while others again have built carefully planned houses with all the necessaries of a comfortable home. Very often a family cannot afford to build its own home, but must take what it can get, and as a rule has not much choice of the location.

Site.

The site of a house is most important, and that is very often selected more by necessity or convenience rather than by hygienic consideration. When possible, the house should be placed on open porous or sandy soil, because such soil is less likely to be water logged, is more easily drained and more healthful than if built on clay soil which is less porous and never on low damp ground. Sometimes houses are built on sites where the soil has been made up of refuse, vegetable or organic matter. This is most pernicious, because ground air and the gases of putrefaction easily find their way into a house built on such soil. As a matter of fact, garbage dumps undergo decompositon for many years after being covered with earth, and houses standing on such sites are unfit to live in. The resistant forces of nature are impaired when one is continually inhaling vitiated and bad air, and a person is liable to take any disease that comes along.

As the first object of any house is shelter from storms, rain, snow, heat and dampness, its materials should be waterproof and non-conducting for heat as far as is consistent with a proper circulation of air, and buildings of wood, stone, and brick rightly built, will answer all requirements. Much circulation of air usually takes place even through walls or partitions of wood and plaster, or concrete, and a knowledge of this so-called natural ventilation helps us to understand how it is that so many people live and even thrive in seemingly unventilated rooms. It helps us also to understand how the damp air of a cellar finds its way upward into the house, and why a double floor with air spaces between is especially useful immediately above the cellar. A dwelling ought to have air space or a dry cellar underneath. Houses without either, and low set, are damp more or less all the time, and unfit to live in.

Light.

Then, there is the light, and that should come from all sides, but it is not always obtainable, as houses are usually built in rows, when the light can only come from front and rear, and often the rear light is blocked, and you will find middle rooms insufficiently lighted or dark. Our building by-law requires window area of rooms to be 10 per cent. of the floor area for lighting, that would be all right if the law stipulated that builders must provide sufficient light, but it does not—the mere fact of a window of a certain size does not ensure the proper lighting of a room, with a fair amount of sunlight. The room may be lighted by a side area, air-shaft or light-well.

Good light and abundant sunshine are most important, both as aids to cheerfulness and as powerful sanitary agents. Sunshine and fresh air are the most destructive agents of micro-organism and disease germs. An old proverb says, "Where the sun does not enter the doctor will."

The germs of most contagious diseases flourish and grow in damp places; hence the necessity for plenty of sunshine and air in every room of the dwelling, because the absence of sunlight not only favors dampness and microbic life, but also tends to mental depression. Note on a dark dis-

mal day how one feels as if they had the blues, so to speak, and the exhilarating, cheerful effect of a bright sunny day. How depressing it is for a woman raising a family who has to spend practically the whole of her time week after week and month after month in a dark, poorly lighted dwelling, with never a ray of sunshine. Is it any wonder that there are mental defectives. In a certain city in the United States in an ungraded school, out of fifty backward children, forty-three were from insanitary homes. Nothing like sunshine and fresh air. Night air is purer than that during the day, and should be admitted freely into our homes—it is less polluted by the dusts, smoke and gases from factories and works, which are closed at night.

Good drainage is no less, and perhaps no more necessary, than good light and air. A lecture on plumbing and drainage will be given later on, so that I need say nothing on that.

Water supply should be first pure and abundant—no exact figures can be given as to the quantity required, but it is safe to say that about 30 gallons per day per capita is ample. We know the ancient reputation of wells, that they have been the source of the domestic supply from the earliest times, and how in later years it was found that wells become contaminated from such sources as drainage from yards, stables, close proximity to privies, cesspools, surface or ground water. You are also aware that it was about the year 1854 when wells began to become suspicious from a disastrous outbreak of asiatic cholera in London, Eng., which was traced to a polluted well on Broad Street, and we know of cases where one typhoid patient polluted a whole public water supply both in England and America. If a private supply becomes polluted, ordinarily only a single family suffers, but if a public supply is affected, hundreds or even thousands, may suffer and perish, so the water supply should be above suspicion. The best and easiest way to render water harmless is to always boil before using.

Sometimes water originally impure, but coming from a distance through soil or sand, is purified by filtration.

We have the terms hard and soft water. Rain water, which at one time was considered the purest for domestic use, contains little or no salts in solution, and is therefore called soft. Some wells and surface water are also soft, all such readily dissolve soap. Waters that contain salts in solution are called hard,—they feel less bland or soft to the skin.

We can sum up good housing as well-built houses on dry sites, built of good material, of good construction, not hedged around with dwellings on the same lot, but with plenty of yard area, well-lighted and ventilated, with unrestricted air space for every one in the house, good drainage and plumbing with modern sanitary conveniences, a sufficient supply of good water, clean, dry and well-ventilated basement, and a house for every family.

On the other hand, what constitutes bad housing is—any condition of housing that in itself tends to impair the physical and moral health of the occupants. Any condition of housing which is unsafe or unsanitary or unfit for a home, any condition of housing which is a detriment to the community, is bad housing, and these conditions are to be found in overcrowded areas, crowded tenements, lodging-houses, rear dwellings, back to back dwellings, alleys, lowset houses, damp, ruinous hovels, dark rooms, lack of proper drainage or water, bad ventilation, cellar dwellings, filthy yard privies, plague spots and slums. These are the places that exert such an evil influence on the generation. As Mr. Albion Fellowes Bacon says, "Bad housing affects the entire community, touching the individual, the family, the neighborhood, corrupting the social and civic life of the whole city. It is the cancer that sends its poison to the finger-tips of the social body. It is the rotten foundation upon which the civic temple unsafely rests."

The slum is the mother of disease. There is in fact more pity for the slum child who lives than the slum child who dies. When a baby dies, the nation loses a prospective citizen, but in every slum child who lives the nation has a probable consumptive and a possible criminal. Crime and disease, defectiveness and delinquency, are traced to the slum. The slum is the enemy of the home and the home is the key to good citizenship.

Where bad housing conditions exist, they are a reflection upon the intelligence, right mindedness, and moral tone of the community.

The slums of all cities, and even in our city of Toronto, have developed partly because the absence of suitable laws and building regulations has permitted the erection of cheap structures with dark rooms, improper toilet facilities, overcrowded area; and partly by the decadence of localities where the houses at first were originally good enough, but where decay and ruinous conditions have brought them within reach of a class that cannot afford to pay the rents demanded for a more decent and better class of houses.

It is evident that when in a growing city with building material, unskilled labor and land values high, and building regulations are enacted which prevents the profitable investment of capital in houses for the working classes, a house famine is bound to occur, and thus the older houses available for occupancy are overcrowded to the limit, and it is difficult to prevent it for shelter is a prime necessity for every one.

A considerable proportion of the population in a growing city consists of unskilled laborers, whose ability to pay for shelter is limited by the amount of wages they receive.

Sociologists tell us, and we think rightly so, that a workman ought not to be obliged to pay more than one-fifth of his income for rent. Now, all cities need unskilled laborers to work on streets, in sewers, works under construction, drivers, etc., and factories, and they need dwellings as near their work as possible, but the difficulty is to secure the class of houses required. Who will build them? Not the speculative builder, for he erects houses for sale at prices around $3,000 and $4,000 and will only build when he sees a good return for the money invested, especially when land, labor and material are high, and unless it can be shown that there is a safe and reasonable investment, private enterprise work, that has ben tried in some European and American cities and failed.

Mr. Thompson in his housing handbook says: "It has been assumed by thousands who ought to have known better, that private enterprise, unstimulated, unregulated, unassisted, undirected has hopelessly failed. It has left us face to face with a very deficient supply; it has given us old slums; it has given us jerry-built "brick boxes" with slate lids; dumped down on dust heaps and put up namely with the object of getting a quick profit in the few years which will elapse before they degenerate into slum dwellings, almost as bad as the old ones in our midst. When the new houses are built, and on good sites, they are of an unsuitable type, and the rents are so unreasonably high, as to be beyond the means of one family, so they have to be sublet to other families; and thus by overcrowding with the increased wear and tear following in its train leaves the housing of the mass of people as bad in many respects as it was before."

Taking England and Wales as a whole, the census of 1891 showed three and a quarter millions of people living in overcrowded dwellings, while six hundred and sixty thousand people were living in one-roomed dwellings. In London 900,000 people were living in overcrowded rooms, and 386,000 had to sleep, eat, wash, cook, live and die in that abomination,—the one-roomed dwelling. In Glasgow, the second city of the Empire, things are worse, not less than one-fifth of the people live in one-roomed dwellings, and the census of 1901 showed fifty per cent. of the people were living overcrowded; and not only the United Kingdom, but in most of the great cities of the world, people are overcrowded in rooms and areas.

Overcrowding is the inevitable result of excessive rents and house famine, with all its evil consequences to the health and morals of the occupants. Overcrowding leads to vice and immorality, and an increased death-rate.

It is a well established fact, according to statistics, that infant mortality is very much greater in overcrowded houses. Mr. Thompson says that infant mortality varies almost arithmetically with housing conditions. Although children under five years of age are about one-ninth of the population ,they furnish one-third of the deaths, and it has repeatedly been demonstrated by sanitary statistics, that the death rate in cities is largely influenced by

the number of occupants to a room. Mr. Russell, in his statistics of Glasgow, 1871-1880, found that the general mortality was 21.7 per thousand, when the average occupancy per room was 1.31; when the average was 2.05 for each room, the mortality increased to 26.6 per thousand. We can readily understand the closer people are crowded together the greater the liability for the transmission of tuberculosis and other infectious diseases, and when they live in an atmosphere which is vitiated, by the emanations from the lungs and bodies of human beings, with insufficient sunlight (nature's great disinfectant) their susceptibility is greatly increased.

Korosi, from his investigations made in Budapest, found that the mortality from infectious diseases was 20 per thousand when there were two occupants to a room; when the number was from three to five, the mortality was 29 per thousand, and when it was from six to ten, the mortality increased to 32 per thousand.

In Finsburg, in 1906, the death rate in one-roomed tenements was 39 per thousand, in two rooms 22.5, in three rooms 14.8, and in four rooms and over 6. Just six times greater in one-room tenements than four and over.

The death rate in the City of Berlin in 1885, among the 73,000 one-roomed tenements, was 163.5 per thousand, against 5.4 among three hundred and ninety-eight thousand residents occupying four rooms and over.

And it has been found from observations made, that children reared and brought up in one-roomed dwellings are short in stature and lighter in weight than those from four rooms and over.

In Glasgow, in 1905 to 1908, 72,857 boys and girls were examined, ranging in ages from five to eighteen years; the boys from one-roomed dwellings averaged 11.7 pounds lighter and 4.7 inches shorter than boys from four rooms and over. The girls were 14 pounds lighter and 5.3 inches shorter.

Dr. Kober, of Washington, in referring to the death-rate among the tenants of the Washington Sanitary Housing Co., says "We have shown that death-rates go hand-in-hand with bad housing conditions. In some cases the general death rates for large groups of population living in insanitary dwellings amounts to double or even treble what might be called a reasonable death-rate. On the other hand, the vital statistics of London show that the death rate in the improved dwellings per wage-earners is far below the general mortality of the city.

In the city of Washington the death-rate among the colored population in 1875 was 42.86 per thousand. Under better housing conditions in 1906, it dropped to 28.81. Among the whites it was 21.4 in 1875, and in 1906 it had fallen to 15.16. During the year ending March, 1906, the apartments of the Sanitary Housing Co. were occupied by 1,158 persons, 778 adults and 380 children. The births were 39 and the deaths 8—a death-rate of 7 per thousand—remarkable death-rate considering the general rate of the city was 15.15. To what extent the low death-rate is due to better housing conditions it is impossible to say, but there has been some improvement, and we have conclusive evidence that the death-rate in all large cities will rise or fall with housing conditions.

We know that scrofula and other chronic forms of consumption, are especially prevalent in dark, damp, overcrowded or insanitary dwellings. Children as a rule are anaemic and as puny as plants reared without the stimulating effects of sunlight and fresh air; and when we add to this the fact that dampness abstracts an undue amount of animal heat, lowers the power of resistance, thus rendering the system more vulnerable to tuberculosis, we have a reasonable explanation why these diseases prevail, especially in cellar dwellings, houses damp, below grade or otherwise unfit for habitation; and while there may be other factors which determine the frightful mortality from such evil influences, none are more potent than deficient sunlight and fresh air.

The question is, therefore, how can the problem best be solved of removing the plague spots where disease, immorality and crime originates. It is well to look into what has been done in other countries in this respect. The problem has been fairly well solved by governmental action in some countries, especially in Liverpool, England.

It was in the year 1864 that parliament granted special powers to that city to cope with, what at that period and for many years afterwards, was regarded as a gigantic menace to the health and well-being of the community. At that time there were in the city of Liverpool 22,000 insanitary houses, courts and alleys and 11,000 cellar dwellings—the homes of over one-fifth of the population. These special powers were contained in the Liverpool "Sanitary Amendment Act," known as "The Local Act," and in 1890 there was the "Housing of the Working Classes Act," and in 1909 "The Housing and Town Planning Act." These acts gave the committee appointed for the purpose the power to clean up the insanitary areas by expropriating the land; remove the buildings; widen streets and erect sanitary dwellings or tenements as they are called. In 1914, out of the 22,000 insanitary houses, there remained all told 2,771, and 1,000 cellar dwellings to be further dealt with.

The death-rate in the city of Liverpool in the insanitary areas ranged from 40 to 60, and some districts as high as 80 per thousand, mainly due to the insanitary conditions of the property at that time.

The incidence of phthisis among the people living in these insanitary areas resulted in an annual death-rate of 4 per thousand. As a result of the housing policy of the housing committee, the general death-rate in the same areas has fallen more than one-half, and the average annual death-rate from phthisis dropped to 1.9 per thousand.

The Medical Officer of Health of Liverpool, in his report of 1913, prepared a chart showing the relation between various sanitary measures and the decline of typhoid during the years 1896-1912, from which it can be seen that the incidence of this disease has fallen in almost exact ratio with housing conditions.

The net cost for the whole of this work is equivalent approximately to two and a quarter pence on the pound on the rates, or less than one cent on the dollar of our money.

Now when that has been accomplished with such satisfactory results in the city of Liverpool, it seems reasonable to expect that the problem could be solved in Toronto by adopting a plan similar to that of Liverpool. It requires capital, good plans and good management to obtain sanitary houses for the workers at reasonable rents. Public health you know is like any article of merchandise in that it is purchasable, and a municipality may have as much public health as it is willing to pay for. It has been said that "Money when made to make others than the owners happy becomes God's money, and will purchase the merchandise of Heaven."

If Carnegie, Rockefeller or other millionaires that have more money than they know how to spend, would devote part of it to a fund for improving housing conditions, in some of our cities, it would do more good than what is derived from libraries or institutions. Eradicate all slums, insanitary and unhygienic conditions and there will be less prisons and hospitals required.

Housing Conditions in Toronto.

When Dr. Hastings assumed office as Medical Officer of Health in 1910, almost his first act was to investigate the housing conditions of the city, because he knew, as every physician who gives any study to the question knows, and every sanitarian knows, that the general health of any city, and especially the death-rate, is dependant to a very large extent on proper housing conditions; and he accordingly had an investigation made in 1911, and the report presented to council. Dr. Hastings diagnosed the homes, and prescribed a remedy, but I am afraid the remedy was not applied as he prescribed.

At that time, and for some years previous, the population of Toronto had been increasing at a rapid rate. With the increasing population and the demand for houses far in the excess of the supply, rents were excessively high, overcrowding was rampant, and slums were increasing.

The slum investigation of 1911 formed the basis of future work, and when a house to house inspection was made, covering the whole city in 1912, we found 8,000 insanitary houses, alleys and rear dwellings; 1,500 houses practically unfit for habitation; 4,500 houses overcrowded as tenements, with from three to ten families in each; six, eight and ten of a fam-

ily were living in single rooms; 600 cellar dwellings, damp, dark and overcrowded; over 500 filthy hovels in a most ruinous condition, surrounded by dirty foul smelling undrained stables, with scarcely yard room enough to turn around in; manure heaps, cesspols of slops, filth and garbage; evil smelling privies, in some cases one for two or more families. Cellars filled with sewage from defective and bad drainage. A single hydrant for the use of several families. One place I might mention out of many, was a backyard dwelling of three flats with a family in every room; neither water, sink or convenience inside; one hydrant, one slop sink and one closet common to all, occupied principally by a drunken, depraved class of humanity. It took us some time to get that place closed, but we finally succeeded after court action, and it has been closed ever since; and let me here say that we have no housing laws in Toronto, the only laws that have any bearing on housing are the Building By-laws of the City Architect's Department, of which I will mention some presnetly. We have to depend entirely on the Public Health Act, and although the Medical Officer of Health has wide powers under that Act, his powers are sometimes questioned and we have had decisions given against the Department. Our powers are limited in some respects.

We found 900 dark rooms. We found several families housed in stables. We found there were 17,181 insanitary outside privies, befouling the air with their fetid odors. These were the conditions found, and it was thought there were no slums in Toronto.

Out of the 2,000 insanitary dwellings reported in 1911, 390 were unfit for habitation, were condemned and closed in 1912; 100 were torn down and replaced with new buildings; 200 were improved, the first year. It was difficult work owing to the scarcity of houses, for although some 2,500 buildings were erected every year, they are not the class of houses required, but houses built for sale. It was not until 1912-1913 that we had the power to placard a house unfit for habitation. Since then the work has been greatly facilitated.

Houses Unfit for Habitation.

Sometimes we are blamed for not condemning more houses than we have. As a matter of fact, we can only condemn and close a house when there is sufficient grounds to warrant that action being taken.

Complaints are made in the office or by letter, very often anonymous, of houses unfit for habitation, and when an investigation is made, we frequently find the house is structurely in good condition, possibly some slight defect, or it may be that filthy and slovenly habits of the tenants is responsible, and we have no grounds for condemning the house. Then again some will complain of conditions existing for the purpose of breaking the lease, when they want to move out, and a word dropped by the inspector, possibly unintentional, will give them the opportunity they are seeking and they move out. Some time after the landlord sues for his rent up to the time the lease expires; the case comes up in court, the department is asked to assist the tenant, or he asks for the inspector who visited the house; trouble ensues. This has occurred three times within the past six months. When a house is reported as unfit for habitation, and the report is verified, it is at once condemned and vacated, but the order to vacate must come from the head of the department. Inspectors are not allowed to pass opinion or make statements to the tenant as to the house being unfit for habitation. The report must first be made to the chief of the division; it is wiser, prevents trouble between landlord and tenant, and places the onus on the department and not on the inspector.

It is a serious matter to condemn a man's house unless we have sufficient grounds. We must use discretion, and if possible prevent action for damages being launched against the Medical Officer of Health or the City. If there are insanitary conditions for which the owner is responsible, he is at once notified. If the tenant is responsible he is at once notified, and brought to court if they fail to take notice. The law compels us to give reasonable notice in all cases. Any ruinous condition, filthy, deficient in light, air,

water or sanitary conveniences can be condemned. Any low-set house, damp, without proper drainage, or any structural defects, where the tenants are unprotected from the weather and storm, can be condemned, but we cannot condemn a house for one reason alone.

Up to the end of 1915, we have condemned and closed up 1,007 houses and hovels as unfit for habitation; 500 have been pulled down and new buildings substituted; factories, apartments, stores and dwellings; 300 have been improved and about 200 remain closed.

In addition to this, we have had over 8,000 houses cleaned, drained and otherwise improved in sanitary conditions, besides public health, buildings improved in ventilation to the number of 200, not including the work done in industrial hygiene; and he have had no litigation or court actions, except in cases where we prosecuted a landlord for re-letting a condemned house.

Houses in Alleys, Lanes and Places.

In 1913 the Building By-law was amended prohibiting the erection of dwellings in streets less than 40 feet in width. If that law had been enacted 50 years ago, there would have been no alleys or dwellings on lanes and narrow streets we have there to-day. They are there and cannot be removed without legislation. We have to keep such places continually under observation and inspection to prevent slum conditions. There are over 3,000 possible slum places on our list in the different sections of the city, regularly visited by the municipal housekeepers, a sub-division of the housing division. These women are not necessarily sanitary inspectors, but sanitary instructors, visiting the homes and teaching the mothers clean and sanitary methods of keeping house and giving advice on domestic matters. Every case of destitution, illness or anything pertaining to child welfare, which they may observe in their daily visits, is reported to the division dealing with such cases. In this way we feel good is being done in cleaning up slum places.

You have heard of "Mrs. Wiggs of the Cabbage Patch." You can see Mrs. Hoban's cabbage patch if you care to take a walk through the ward in the summer; and in the east end you will come across Mrs. McCall's cabbage patch, and west, through the Niagara district, Mrs. Hall will know her cabbage patch.

We are working along the lines of education among certain classes, and we are getting some results. Very often we have to issue the blue paper in order to get results, and even then it is sometimes difficult to force cleanliness.

Yard Space.

The building by-law has for years made provision for not less than 300 sq. ft. of yard area for every dwelling. In 1913 that was amended, making provision for not less than 500 sq. ft. for each dwelling. That is a wide provision, but it does not go far enough. Not more than 68.7 per cent. of any lot should be covered with buildings for dwelling purposes, except in case of a corner lot, to insure good light and air.

Cellar Dwellings.

Out of the 600 cellar dwellings, we have closed over 500. Some of the worst plague spots, damp, dark and overcrowded, where disease was found among the occupants. I might cite case after case, but time will not permit.

There are cellar dwellings and basement dwellings. Basements are permissible, if dry, well lighted and with through ventilation, but we condemn all cellar dwellings. We differentiate between a cellar and basement, in that a cellar in a storey where more than one-half or two-thirds of the light and space between floor and ceiling is below the ground level.

A basement is a storey where more than one-half of the space and all of the light is above the ground level.

Back to Back and Rear Dwellings.

While we have closed up a number of such places permanently, there are still a number that ought to be closed, but are not for the reason that as long as they are reasonably clean and have sanitary conveniences, the department can't interfere. When a rear dwelling is condemned and closed, the owner can secure a permit from the City Architect to improve the building; but if the building is pulled down it can never be restored. The Building By-law until recently prohibited the erection

of a building for human habitation in rear of one already on the lot; but it didn't prohibit the erection of a dwelling in front of a rear dwelling; and that is why we have rear and back to back dwellings to-day.

In 1913 the by-law was amended so that no more rear dwellings can be erected or used for dwellings (case in court). That should have been the law from the first (bad administration).

Overcrowding had increased up to 1912-1913. Rents were excessively high—there were no houses to be got. We required at that time at least 10,000 houses at reasonable rents in order to house those that were being turned out of condemned places, and the families that were crowded together in single houses, so the department was face to face with a very difficult problem. The situation was so acute that something had to be done; disease was spreading from excessive overcrowding, and we commenced to crusade against all overcrowded dwellings and lodging-houses. Families were notified under threat of prosecution to remove, and advised to double up in single houses rather than live as they were. Several were summoned to court and remands given from time to time in order to procure other places. In 1914, you will remember, there was a slump in real estate, owing to the financial depression at that time, and some 3,000 houses had been erected by speculative builders for which they could find no sale; and rather than keep them standing vacant they were put up for rent. The result was that there was a general doubling up in single houses, and the older houses were vacated; new houses were occupied—then rents dropped. This was the only course open for us, and we took advantage of it.

The following house to house inspection for 1913-1914 shows the result of our work in checking overcrowding:

	1913	1914	1915
Single houses occupied by 2 families.....	5,000	11,000	10,500
Single houses occupied by 3 to 4 families	3,000	883	400
Single houses occupied by 4 to 6 families	1,000	144	...
Single houses occupied by 6 to 10 families	500	48	...
Lodging houses	700	980	496

We considered under the circumstances it was better for 22,000 families to live in 11,000 houses, than for the same number of families to live in 4,500.

Now, as to when a house is overcrowded, that is determined according to the number of inmates, the number of rooms and the air space. It has been computed that when the average number of occupants per room is one-and-a-half, the house cannot be overcrowded, but when it reaches two there is overcrowding.

We do not, however, always follow that rule. We consider the air space and the quality of air. 600 cu. ft. is the government standard for air space per individual for sleeping. Sometimes we find 400 or even 300 cu. ft. in a room well lighted and ventilated is better than 600 cu. ft. with bad ventilation. In many cases we find the average bedroom is less than 1,200 cu. ft., and so we have to use judgment. Two children under 12 years of age count as one person; they inhale and exhale about half the air that an adult will, consequently only vitiate half the amount. According to scientists, a man at rest exhales 0.7 of a cu. ft., CO_2; while at work he exhales 1 cu. ft. per hour; children one-half.

Dark Rooms.

As I have said, there were 900 dark and insufficiently lighted rooms, some without windows or light except what came through the door—others again with borrowed light from rooms or halls. Most of these were in apartment houses that had been erected a few years previous, when plans were passed and permits issued by the Architect's Department without any reference to the Department of Health. The result was that owners utilized every foot of space without regard to the proper lighting and ventilation of living and sleeping rooms, many of which were lighted by air-shafts and light-wells covered at top. I am glad, however, to say that the City Architect is co-operating with

this department, and in future all plans for buildings to be occupied as dwellings are submitted to the Department of Health for approval before permit for such is granted, so that in future rooms must have sufficient light and ventilation. We have closed up or had improved 800 such rooms. There are still a number of insufficiently lighted rooms which cannot be improved, but are not used as bed-rooms.

The city can congratulate itself that Toronto cannot begin to compare with other places in the matter of dark rooms, when we consider that in 1903 the city of New York had 370,000 such rooms. In 1913, just ten years afterwards, there were still 23,788 dark rooms, and 78,113 insufficiently lighted.

Yard Privies.

Out of 17,181 yard privies in 1912, there remains now only 4,000, having closed up over 13,000 since 1912, and if it were not that we have had to relax in this work owing to circumstances arising from the war, a greater number would have been closed. The most of those remaining are in the outlying districts. We have had to give extensions of time in some cases for various reasons. Dr. Brittain of the Bureau of Municipal, has stated that this reduction in the number of yard privies is a most remarkable achievement. It shows the wisdom of specializing.

Lodging-houses.

There is no class of houses that require more frequent and rigid inspection than the common lodging-houses, where the foreign element lodge. Composed as they are of different nationalities, they seem to delight in crowding together and live under the most insanitary conditions. They haven't the least conception of cleanliness, or what sanitation means, and the only way we can teach them is through their pockets.

It is not necessary for me to relate the conditions found from time to time. You have already heard the different reports of the filthy, verminous and overcrowded places, and how tuberculosis was beginning to spread, and how that numbers of Bulgarians and Macedonians affected with the disease were reported by the Public Health nurses, due to filthy and crowd poison; and also the number of lodging-houses that have been closed without the aid of the police court. The magistrate refused to consider overcrowding, and would only listen to evidence of filth. The most glaring case, about two years ago, was a store and five rooms in which were found at midnight 77 men sleeping like cattle—25 in one room with space enough for 6, lying four in a bed, and every foot of floor space taken up so that we had to step astride their bodies in order to pass. Every door and window closed. The case was brought to court, and the magistrate threw it out. Finding it useless to summons for overcrowding, we issued a summons for insanitary conditions in every case where there was overcrowding, and got convictions, and fines amounting to hundreds of dollars. This soon caused them to spread to other parts of the city, so the lodging-houses increased from 100 in 1910 to 980 in 1914. At present there are only about 900, the decrease due to the present war.

The one great drawback in dealing with lodging houses is that they are unlicensed in Toronto, and until they come under license it will be impossible to keep them under proper control, do what we will.

There had been a decided improvement in the restaurants of the city since they were placed under the control of the Medical Officer of Health. They are regularly inspected by an inspector who understands his business, and unless they come up to the requirements necessary, the license is not granted. Lodging-houses can be controlled in the same way, if they are placed under license, the same as restaurants. I know Dr. Hastings is about to seek legislation for the licensing of all such places.

Tenements.

A tenement-house and an apartment house are in one sense the same. Any house in which there are three families or more living is considered a tenement house, and the same with an apartment-house, but there is this difference—an apartment-house consists of a number of four, five or six-roomed suites or apartments. Each family lives independent of

the other, has its own lavatory and conveniences, while a tenement-house may be occupied by several families on a flat, with only one convenience common to all — sometimes only one water tap and sink for the use of all on the flat. This is the class of houses we want to prevent getting a foothold in Toronto. We have only three at present, and from our experience in dealing with those, we can characterize them as nothing but a curse to civilization. There are a few private houses in which four families live, and as long as there is room space sufficient, we can't prevent four families living in a house. But unless we can get legislation and laws enacted to prevent tenement-houses and slums, in a few years Toronto will have the same experience other cities have had in the matter of overcrowded tenements, in spite of all the department of health can do.

When families live in tenements, the sanctity of the home is broken, there is no privacy, and privacy is the essential of the home; and when all sexes, men, women, boys and girls, have to use the same closet, the same halls, and stairs, sometimes dark, it tends to immorality. Children reared or brought up in tenements are delinquent and defective. There is no place for them to play; the street is their rendezvous, and they very soon become adepts in vice and crime.

Prevention is the only cure for slums and overcrowding; and the only way to prevent such is to have more one-family houses. At the present time there are upwards of 25,000 families living doubled up in single houses and apartments. We have, all-told, on the first of January, 1916, 97,136 buildings in Toronto, 84,345 of these are dwellings and residences, and 12,791 are other buildings, schools, churches, factories, public buildings, etc. Now, in order to provide every family with a dwelling, which is necessary from a sanitary point of view, we ought to have 108,000 dwelling houses, instead of 84,345.

In the last five or six years, the population of Toronto has increased 200,000; at present it is about 540,000. At the expiration of the war people will be flocking into Canada from different countries, and there will undoubtedly be an influx into Toronto. There will be no retardation of the city's progress; Toronto is bound to go ahead, so that in five years from now we will most likely have another 200,000 added to the population. Now what does that mean? If it means anything, it means this—taking a low estimate, say, of 150,000 increase in five years, and the average number to a family is five, it means 30,000 families that will have to be provided wih dwellings, or 30,000 houses. It is possible that number might be housed in 25,000, but even at that we require, at the very least, 5,000 houses erected every year for the next five years in order to meet the demand that will be for houses at reasonable rents; and unless we can get them, overcrowding will be rampant, slums will increase, and the community will have to pay the penalty.

President Roosevelt, in his message to Congress in 1904 speaking of the high rate of mortality from slums and overcrowded tenements, says:

"The slum exacts a heavy toll of death from those who dwell therein. No christian and civilized country can afford to show a happy-go-lucky concern for the youth of to-day, for if so, the community will have to pay a terrible penalty of financial burden and social degradation on the moral. It requres no further argument to prove the truth of that statement."

Of course money is the prime object. It takes money to eliminate the slums and plague spots of our city, and we are met on every hand with the cry of economy, even in public health matters. Economy is a good thing, and it is a laudable purpose to economize in all things, but it is false economy and bad policy to economize at the expense of life and health.

SANITATION AS IT WAS

By DR. A. P. REID

Formerly Provincial Health Officer, Middleton, N.S.

(Association of Medical Health Officers of Nova Scotia, July 4, 1916.)

The subject I presume to address you on is so large to treat, in extenso, that I will only refer to the more prominent points, trusting to your courtesy as my excuse. I have spent a long and very indifferent or inactive life working on those lines—preaching as well as practising sanitation—for Health is the pinion that supports and directs all our sublunary efforts.

This cardinal point I learned at a very early period in life, but I also learned much that was said about it was not true, and much that was true was not known, for all of the attention devoted to it by the most able minds of the past centuries far too often assumed truth, became fiction, and we were travelling on a morass. I presumed to enter the lists sustained by the fact, that "the race was not always to the swift nor the battle to the strong," and I did not class myself with the swift or the strong, for I soon learned that my ability was only fair to middling—because in every line of endeavour I found that I was surpassed by others. I learned also to counterbalance my defects by persistence in effort. A matter of very great moment is not to know you are whipped. Even if downed often, get up again and peg away. To attain an object find out all the favoring lines and then, what is of more importance the unfavourable ones, too often glossed over. Lay down your course and hang on to it, meeting obstructions known and unknown. In fact, persevering effort is the only pathway to success. Your original lines may have to be modified, but very rarely abandoned. One may have many neutral and physical defects that are irreparable, but anyone can cultivate perseverance, and this became my reliance.

Though somewhat handicapped, I also learned that what another could do, I could attempt and get on at fairly well. Though thirty miles a day was about my best walking ability, I have met men that could do that and more, and carry me as well. Yet on hundreds of miles of a stunt, I was on hand at the end. At college, by steady work, I always had some points above a minimum pass. Looking back on many a decade of years, I recall many of my companions on the barque of life, who set out with me—so many my superiors in all lines—men who achieved distinction, and deservedly so, but now those on deck can be more than numbered by the fingers; the others dropped overboard and some of the brightest when not far on the voyage of life.

I also learned that the greatest demon of destruction was worry, worry no matter what the cause, and at the same time learned there was no occasion for it. Overcome worry and you put sanitation on the road to success. Teach and practice and make it a part of life, that we must accept the inevitable — death, injury, loss, hardship—then why not accept it and let it go at that. Take the best course visible, let the dead past go, and compel your mind to look to the future and never backwards, unless as a guide or a warning. "There is nothing so bad that it could not be worse," so sing "High diddle," or "Tipperary," even though your voice may be a little cracked.

You may say this moralizing is all very well, but it bears but lightly on sanitation. It is just this, when you know the conditions under which I absorbed my ideas, you may understand why I may differ with some experts. I paddled my own canoe since I can remember, assisted in my school days by teachers (sic) who illustrated just how it should not be done, with a two-foot ruler or a rawhide or a birch too generously applied. (I never knew a boy that amounted to much, though, that did not deserve the birch now and then.) But now, looking back,

my earlier ideas are modified. I, at that time, looked on school as a place of punishment for boys, but to me it became a mentor. It sharpened my wits and made me keep an eye to windward, it taught self-reliance and the power of observation, and the lessons there learned have lingered by my side every day of my life. When used to hard knocks, they cease to give rise to fear and tend to obliterate nervousness and worry, the bane of easy comfortable human existence, the bottom rung of the sanitary ladder.

Dirt and disease is a motto that requires qualification. Though often associated they are not synonymous. I think I may safely say that dirt (per se) causes no form of disease, but it does prepare the way. But a foreign element must be introduced, and to guard against this I consider the acme of sanitation—for immunizing the human race is only very partially practicable.

Asepticism is by all manner of means preferable to antisepticism which should only be used to remedy our defects in asepticism. We want prevention rather than cure.

The college, valuable though it is, did not so much favor what knowledge I may have, as that it assisted observation. I lived for a period with our North-West aborigines, and saw unlimited dirt, squalor, shades of starvation, exposure and fatigue—with extreme heat and cold and defective covering or protection — food often most repulsive and used from gorging to abstinence—from life sustained by flesh alone—down to roots and weeds and for periods on nil, water being the main stay, and the want of it, the most severe punishment, yet I cannot recall a case of dyspepsia or stomach trouble, coughs, colds, rheumatism, pneumonia, heart affection, typhoid or other fever, tuberculosis, syphilis or cancer, no gangrene in severe wounds. Death was only from war, accident, starvation or old age. The savages had no monopoly of good health. Those who wandered into these districts from civilization and co-mingled with the natives enjoyed equal immunity. Those people were great sanitary instructors. We all recognize the supreme importance of pure air and good ventilation, pure water in abundance, bathing and steam bath, exercise, knowledge of and facilities for cooking, and above all sewerage and the removal of organic waste. All these the savages had in perfection, taking into account their customs and desires.

Their tents were open air domiciles. They camped beside the river or lake, giving bathing facilities that they used. All over the western plains, we passed what were called "sweat houses." These were circular dome-shaped mounds about five to eight feet in diameter and two to three feet high, with a hole in the side, only large enough for a man to crawl through, and in the centre of the mound a cavity about one foot in diameter and the same depth with some stones in it. Some were mounds of earth built on a frame work, and where this was not available a frame work of willows or small sticks was made into the same form and when to be used was covered with skins to hold in the steam. The modus operandi: The bather made a fire and heated the stones, which were then placed in the hole in the centre, put a vessel of water in a convenient position, stripped and crawled through the hole in the side, curling himself round the central cavity. Then he poured water on the hot stones in quantity to produce as much steam as he wanted. The hot steam rose directly up (outside hole being closed) and diffused so that the bather could regulate the temperature and quantity. When finished he crawled out of the hole, all in perspiration, and jumped into the water beside which these sweat houses were located. In the wilds the steam bath was available at little cost or trouble, which cannot be said of these conveniences in civilization. These sweat houses were not torn down.

For exercise, it was their life work. Their bed was the ground which, when used to it, fills the bill O.K. Food varied with season and locality. Cooking, though primitive, filled the bill from a sanitary point of view. Whether they had cooking utensils or not, it did not matter so much. An oven could be improvised by some small stakes of dry wood (not to give taste to the broil as green stakes would do) driven into the ground near the fire on which was impaled the roast. One stake would suffice for a small piece and this placed in front of the fire, allow-

ed the cooked portion to be eaten, while the other side of it (next the fire) was at the same time being prepared for consumption. Bread could be baked in a similar manner by winding the dough around the stake. If stones were available they served well for bread baking as they could be heated, the dough placed on them and put in front of the fire, and baking went on from both sides. They always used unleavened bread. Any variety of vessel could be used to boil water in, be it metal wood or grass — heated stones dropped into the vessel of water had it soon boiled, when the stones (or pieces of iron) were removed. One day we met some Indians at a halting place and gave them some flour, and as they had no pots or pans we designed to lend them ours when they were emptied, but they were not required. A piece of cotton a foot square was fished out, and the flour piled into a cone in the centre, then a depression was made, and some water poured in, when mixing the flour began. Then more water was added and mixing continued until every scrap of flour was converted into dough and the cloth was never even dampened. The cloth was then rolled up and put away for future service, the dough placed round a stick, and the Indians had their dinner cooked and eaten ahead of us with our paraphernalia. Sanitary laws were not infringed, cleanliness prevailed, and the kitchen menage very limited. As to sewerage and organic waste their method was perfection —our system reversed. We remove our detritus; they leave theirs in situ and remove themselves. As they never stay long in a place and make a rule not to camp twice in the same place, unless at long intervals, natural agencies are allowed to purify and disinfect. But if into this Arcadia we introduce disease it spreads fearful havoc, as they have not the partial immunization of civilization conferred by long exposure to disease agencies. At that time I was in a dilemma: "Why was this thus?" Medicine gave no sufficient explanation. There were innumerable theories more or less contradictory. The doctor was handicapped. This was before the time of Pasteur and the host of eminent men who took up his lead. Biology was an academic phrase that had no meaning for the every day work of the doctor. As a working theory or explanation I adopted that of Hippocrates—that an open air life, available food, moderate exercise, no worry and no excesses will conduce to health from the equator to the poles, as was continuously demonstrated. But the antithesis also was in evidence, my treatment of tuberculosis settled down to that of Hippocrates, which is that of to-day, but its modern explanation is of yesterday. My other guide was the Hebrew prophet Moses, the greatest sanitarian of all the ages. The man (no doubt inspired) that took a diseased enslaved people and welded them into a virile nation that no amount of ill usage, hard times, persecution, starvation, etc., can emasculate from them their supreme vital virility. His methods are detailed in Holy Writ, to which I would refer you.

Of nothing was I more convinced than that consumption or tuberculosis was hereditary and not infectious, but there was the possibility of cure by hygiene in its wide acceptance and so it remained until the tuberculosis bacillus was demonstrated by Koch and theory was displaced by fact. There is now no theory of spontaneous generation (that confounded dirt and disease), though it was the live question before the time of Pasteur who valiantly contended for the "omnum virum exovo" theory (all life from a preceding life), and in the environs of fifty years ago I was more than interested in this subject. Dr. Charlton Bastian ably contended for the spontaneous generation theory and not until Pasteur's demonstration was there much doubt of its correctness. The great conflict between these doughty defenders took place over "hay tea," which was specially prone to fermentation. Each repeated the other's experiments and got diverse results, and I thought that Bastian had scored the game. Pasteur unqualifiedly stated that boiled hay tea in a sterile, stoppered test tube, would not ferment and would remain unchanged. Bastian triumphantly proclaimed that after most carefully carrying out Pasteur's experiments, after a time a growth took place in the assumed to be sterile hay tea. But Pasteur was not put "hors du combat"; his response was, after further experiment: "Hay tea boiled and kept sterile in a sealed tube may ferment, and this even when boiling has been kept up for

about fifteen minutes, but if the boiling be continued for a half hour or over there will be no regrowth no matter how long it be kept in the sterile tube." And he gave as the explanation: "There are two elements to sterilize, the bacillus and its seed or spore. The former is killed by boiling, but the spore is more retentive of vitality and requires longer exposure to heat." A plant of wheat, oat or anything in fact when germinated is destroyed by a heat, has not much effect on the ripened seed of the plant. This we all know, but not the least of Pasteur's discoveries was the demonstration of the fact that microscopic life follows the same law as macroscopic life. Not until this fact became known did we know how to sterilize. Neither Bastian nor any other has been able to confute Pasteur's dictum, and the spontaneous generation theory passed into the shades and is now rarely ever mentioned.

This question had a commercial and economic value that was solved but not explained before Pasteur's time. It was assumed that the great cause of fermentation and putrefaction generally was the presence of oxygen; ergo, remove the air and with it the oxygen and you can preserve fresh organic substances, especially foods. The best way of doing this was by heat and blowing off, and it was successful and as a result we had canned goods, hermetically sealed, so called.

Time showed that oxygen was quite an outside factor and that air filtered through sterilized cotton wool had no influence in causing fermentation, etc.; ergo, the canned goods business should be a failure. But these merchants "built better than they knew." Their process required such long application of heat, that the germs of fermentation as well as their spores were destroyed and the canning business is in increasing evidence.

In Nova Scotia, fifty years ago, travellers and strangers were few compared with later years. The great majority of the people were on farms and much in the open air. Even the towns and cities were not crowded, and though they had their share of dirt, they had not much disease, for dirt and disease are not convertible terms. But the crowding of people into the towns and the incursion of tourists, etc., changed social conditions. Vaccination had done away with smallpox, but vaccination gradually fell into desuetude. At one time vaccination and baptism were conferred on nearly every child, but to-day what a small percentage are vaccinated, as the last few years have demonstrated. As to baptism it is not our theme. Without vaccination we are not safe, and you must try to do the almost impossible (except in Germany). I can sympathize with you, as I have been so many years at it, but I do not feel proud of my work. It is hard to succeed in an effort to move hebetude, and a thing there is no money in, when your subject has no personal interest of moment in it, and the crowning argument is: "Why can't we do as our fathers and grandfathers did?" But you must peg away.

Tuberculosis.

I have been specially interested in this question for over sixty years, and the lines I would take for its treatment and eradication diverge somewhat from those now travelled on, which I feel confident will fail in possible success unless they switch into my line. This on its face may be questionable modesty on my part, but I must adhere to the above dictum. My ideas are no secret, as I have published them freely. To recapitulate—

1st. I think that sanatorium system is an attempt to do the impossible, not that it should be abandoned, but that it should be put in its proper place, simply a special hospital to care for the afflicted. For it may assume to cure, and yet it cannot do more than any other hospital.

2nd. It is rather a means of propagating than eradicating tuberculosis for these reasons. It gathers disease from all round, leaving the hot bed producing the disease practically intact. It returns patients more or less relieved to their homes, who in time may yet propagate the disease. In fact the sanatorium would become a social acquisition as any other hospital. My idea is to so arrange things that at some future time it would be extinguished for want of patients.

To illustrate, were there a lot of small fires in a forest, to extinguish them common sense would dictate, extinguish each one separately and render its spread im-

possible. The sanatorium idea is "gather all the small fires into one where it can be systematically handled," but proper consideration cannot be given to the surroundings of the numerous small local fires and the possibility removed as to their again giving trouble. The sanatorium is a necessity as an hospital, but it is not the means to eradicate tuberculosis.

3rd. Not until every domicile is run on sanitary lines (especially one that has harbored the disease, and how few have not done so), in fact a sanatorium—and it should be so even if there were no tuberculosis—can we expect to succeed. This no doubt is a herculean task, but it is imposed on us, and there is no way to avoid it. Hence all our efforts should be dominated by this idea, and in time we must succeed. But we must begin and that on well considered lines. In crowded communities there is a problem to tax the skill of doctor, financier and business man, and it is going to be costly. The advanced idea of the "city beautiful," and spreading the city domiciles over a wider land area are moves in the right direction.

4th. The people must be taught individually, taught how to live sanitarily. This could be begun in the schools, but it must be run on different lines from that which now obtains in the so-called hygiene teaching. This teaching must be done in the domiciles and be practical. The teacher must be able to point out defects and at the same time be able to correct them, at the expense of the owner, or of the public if he be unable to pay. An unhealthy house is a menace to its vicinity. This must be kept up regularly and systematically until the end is attained but every year the need will be less. All this means expense, but it is a hobgoblin compared with the saving of time and money that will result from the improved conditions. I fear we must first innoculate our politicians to pave the way for success.

5th. While eradicating tuberculosis it will include the whole host of infectious diseases. We cannot trust to antisepsis or a graduated immunity—it must be asepsis. I at one time thought I had some definitely accurate ideas as to the different phases of this malady, but now I fear my thumb nail would be large enough for their inscription —which could be expressed by the three letters nil. To illustrate I think most tuberculosis experts would coincide in opinion, that one who had spent his life in the open air (in tent) on the prairie, at agricultural work, young, healthy, strong, who had been never a day sick in his life and was the picture of health, who knowingly had never been in contact with sick people or in much contact with anyone during three years, engaged in breaking up a prairie farm would be free from risk of tuberculosis.

My son, aged 27, single, 5 feet 11 inches tall, weight about 170 lbs., filled all the above indications. The third year he got his house up and secured his deed on his way home for a visit. He appeared as usual on his return, but had a slight cough in the morning the last two days of his travel. He had not been in the company of sick people. As this cough continued I sent a sample of his sputum to the Public Health Laboratory and the report was "Tuberculosis." He still felt strong and well, but his admission to Kentville sanatorium was arranged for on first vacancy. He came home in November and got into the sanatorium about the new year. In the meantime he was placed under strict anti-tubercular treatment. After about two months in Kentville, I had word to take him home to die. He got home from the West in November and died the following March, never once for one day showing improvement. He only lost weight towards the end, his appetite kept up, he slept well and had but little pain. He gradually sank. In all my experience I never met a case of tuberculosis that did not rally for periods more or less until this case of my son. No doctor that saw him could fathom the case. It was not miliary tuberculosis, as it measures life by days, not months.

After careful consideration I would hazard the following diagnosis: at some place, time unknown, he had become infected; the tubercle bacillus set to work slowly and steadily, but the young man's health and strength was such that it prevented any symptoms to cause alarm. This process continued until both lungs became infiltrated. Then, from some cause unknown, softening began at the lower left base, gradually spreading upward until the

whole left lung was involved, then crossed over to right apex and progressed downwards until the whole right lung also was involved and the scene closed. Much as if you had two piles of shavings near each other and joined at a corner; a fire started at a distant part of the one pile could pass unchecked over both.

Gentlemen, I have taken up sufficient time to explain my ignorance and I have indicated the lines that experience has taught me are most likely to be successful in combatting the bane of sublunary life, not only of mankind, but of most of the vertebrate creation.

My life is one of many demonstrations of how small a human unit is, though fairly started, with average ability and a fair share of enthusiasm. And though like others born tired, I never had a fair chance to use this acquisition. And now in sight of the eightieth milestone he must honestly write down his accumulated and positive knowledge by a fraction too small to be easily recognized, yet the revered Longfellow in his Psalm of Life sums up the situation. I will only quote the idea in one of the stanzas, but not using his language (trying to gild burnished gold), because it looks to me so like a defect. But even, it is said, the Great Jupiter may nod. You can read the whole poem with pleasure and compare it with my version of the stanza to which I have above referred. We may—

"Leave behind us
Footprints in the sands of time;

"Footprints that perhaps another,
Marching with life's varied train,
Some forlorn and wearied brother
Seeing may take heart again."

Gentlemen, farewell!

MATTERS MILITARY

A Brewery in France,
Oct. 11, 1916.

AS Raymond Hitchcock sings in his celebrated song, "That's joy for you," I am back at the same old station from which I made my debut in active service.

But things are not the same; when we were here before we were domiciled in the chateau of the proprietor. Now our officers' mess is in a big bare room that in the days of peace probably served as a storeroom.

Some of the officers are living in canvas huts, and I am living in a small, semi-basement room that was a paint store when we were here before.

I had the paint all cleared out, the place scrubbed and whitewashed, and it makes a pretty fair living and sleeping room.

It is brick throughout, walls, ceiling and floor, but it is right next to the office and convenient to the wards, and one does not have to wade through a sea of mud to get to it. And experience teaches one in time that all these things are a consideration.

To the uninitiated in military affairs, or even to those whose service has never called them beyond the zone where everything is ready-made or to be had for the asking, there must be times when it is difficult to understand the conditions under which the average doctor works out here.

The average layman pictures the army doctor as spending his whole day in surgical operations. Fairy tales have even been published of wonderful underground operating theatres within a stone's throw of the trenches.

One I read myself even had "pussy-footed" nurses included in the picture.

I think I have seen the theatre that this article had reference to, and it was a good three miles from the front line.

A German shell came dangerously close to it one day, and the next day it was moved. Nurses and helpless victims of the war are not kept within the danger zone in any place that I know about.

The mere fact that many of the seriously wounded, not dangerously, reach England within the 24 hours would indicate that little in the line of surgery is done in forward zones.

Experiences are varied and wonderful, and one sees much that is interesting, but the majority of men that are in the forward lines are making the same sacrifice as all other classes. Much of the day's work varies little from that of general practice at home.

And in the practice of his profession here one lacks many of the appliances and other aids that he would have in practice at home.

The regimental medical officer has the roughest life, living for a portion of his time in a dug-out in the trenches and constantly moving with his battalion as they move in and out for their allotted periods.

His billet when out may be in a chateau or it may be in a peasant's cottage, or even a barn. His office is usually in a barn or similar small building. And he never stays in one place long enough to make it worth while to fix it up.

In the field ambulance the medical officers may average three months in the same place. Their billets vary from a very comfortable room in a chateau to a tent or hut or an apparently impossible room, such as the one I am living in now and have just described.

Life out here is pretty much what one chooses to make it.

The ingenuity and versatility of the individual officers makes all the difference between living like animals and living like gentlemen.

One may see as high as a hundred sick in a morning, diagnose their cases, and treat them and spend the rest of his day as director of a scrubbing, whitewashing or cleaning corps. He may have to plan and make all the estimates for alterations to buildings or the erection of entirely new buildings. He may find himself superintendent of a road making gang. And the men that work under him are miners, clerks, preachers, students and men from almost every walk of life.

A former policeman from one of the English cities has made an excellent superintendent of the bulk of the construction work that we have done. Much of the work that a man does will be of little use to him in civil life, but one is not looking to profit from this world tragedy.

The majority of those who have come over here have offered everything they have, and in taking up these lines that are foreign to their chosen lines in civil life they are simply trying to carry out their contract to the letter.

We medical men came over here to make the lot of the sick and the wounded as pleasant as possible.

If by taking over a series of seemingly hopeless buildings and by our efforts and thought converting them into clean, cheery and pleasant rests for Tommie in his journey towards the more elaborate hospitals of his home land, we have done something to ease the physical and mental pain of the thousands that have passed through our hands then no task has been too menial and no sacrifice too great.

I remember a saying from the "Passing of the Third Floor Back" that has always lingered in my mind: "The fear of being little keeps most men from becoming great." In this war we of the R. A. M. C. have raised this from the individual. We ourselves do not look to become great, but by applying this little epigram to ourselves we have brought the greatness to the corps to which we have the honor to belong.

Pages on pages have been written in eulogy of the work of the Royal Army Medical Corps during this present war.

The magnificent system of sanitation that at present exists has had many of its best features worked out by men that never gave sanitation a thought before this war. The system by which the men are bathed and given complete changes of clothing that has been disinfected, washed, ironed and mended, has been brought largely to its present state of efficiency under the direction of medical practitioners from various quarters of the globe.

I have never been without my wards during my whole service in France.

My average daily count of patients has varied. It has been as low as ten and as high as two hundred. The cases on the whole have been of an ordinary type.

My wards have varied from the drawing and billiard room of a chateau to the cellar of a malting house.

The majority of the wounded I have seen I have simply examined, given surgical aid of the most urgent type where necessary, and passed on.

I have hopes that in the near future I will be transferred to a surgical service in one of the clearing station or a base hospital.

I have been recommended and placed on the list for this change.

Should this good fortune be mine I will probably be in constant touch with work that will be more to my liking.

But my work in the forward line will always be a pleasant memory to me, carrying as it does a feeling that I have been of real service and have been able to "do my bit" in making life a little easier and brighter for "Tommie," who, after all, is the peg on which the fate of the whole Empire hangs.

C. G. SUTHERLAND,
Captain.
102nd Field Ambulance,
B.E.F., France.

SMALL WATER WORKS AND SEWAGE WORKS

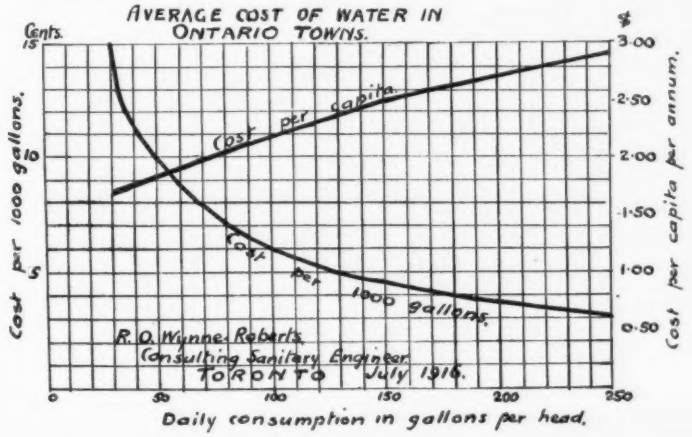
By R. O. Wynne-Roberts.*

ONE OF THE difficulties encountered by Health Officers in connection with the construction of water and sewage works (especially the latter) is the cost and the problem of efficient management. In the case of sewage works there is also the absence of tangible returns on the investment. If a concessionaire approaches a Council for remission of rates or a relief in the financial burdens during the early stages of a prospective enterprise, it is usually not a difficult task to persuade the people that an expenditure of money or what is its equivalent, an agreement to remit rates or to assume certain liabilities on a commercial concern, means something that is worth while. But the assumption of financial responsibilities of similar magnitude in connection with works for the conservation of public health often calls for arguments of a more imperative nature. It is evident that waterworks, for example, are not readily installed in smaller towns, for in Ontario there are about 15 towns of 500 to 600 population without such equipment; 25 towns of 600 to 800, 19 towns of 800 to 1,000, 13 towns of 1,000 to 1,500, 6 towns of 1,500 to 2,000, 5 towns of 2,000 and over; total 83.

Other provinces, doubtless, have a large number of towns in a similar position.

If the returns of waterworks undertakings in Ontario, which are available from towns of 3,000 inhabitants and under, are examined and analyzed, it will be found that 3 are operated at a loss, 9 at a profit and 1 breaks even. Another interesting fact, in the cases where losses are incurred is that the average daily consumption per head ranges from 116 to 356 gallons, and in the others from 29 to 86 gallons. The reason for the losses is evidently due to the absence of economy on the part of the people.

The writer had occasion to study the statistics of about 60 Ontario waterworks of all sizes, and after tabulating the analyses and striking an average, certain results were obtained, and these are presented in the following chart, which it is hoped is clear to all.



*Consulting Sanitary Engineer, Toronto.

It will be seen that where the average daily consumption is 50 gallons per head the cost of water averages about 10 cents per 1,000 gallons or $1.85 per head per year. Taking five examples and the results are:

50 gallons per head daily, cost about 10 cents per 1,000 gallons, or $1.85 per capita per annum; 100 gallons per head daily, cost about 6 cents per 1,000 gallons, or $2.18 per capita per annum; 150 gallons per head daily, cost about 4.7 cents per 1,000 gallons, or $2.50 per capita per annum; 200 gallons per head daily, cost about 3.8 cents per 1,000 gallons, or $2.75 per capita per annum; 250 gallons per head daily, cost about 3.2 cents per 1,000 gallons, or $2.90 per capita per annum.

Expressing the results in another way, it will cost to supply water to a family of 6 persons as follows: 50 gallons per head per day, $11.10 per annum; 100 gallons per head per day, $13.08 per annum or 11 per cent. extra; 150 gallons per head per day, $15.00 per annum, or 35 per cent. extra; 200 gallons per head per day, $16.50 per annum, or 48 per cent. extra; 250 gallons per head per day, $17.40 per annum, or 57 per cent. extra.

Fifty gallons per head daily is ample for all uses in a small town, except in rare cases, consequently for the same effective service the ratepayers must pay the above extras, for what is of no value to them. The foregoing figures are the averages of the published statistics from Ontario cities, whereas in small towns and villages the average will be considerably higher. Moreover, the ratepayers must also pay for the disposal of the sewage, and the more water that is used the more sewage has to be got rid of. So the expenses mount up.

It is, of course, difficult in small towns to administer the water and sewage works as efficiently as in large towns, because the same training and experience cannot be commanded, and cheaper men must be employed. This condition seems to suggest the desirability of organizing a co-operative scheme, something on the lines of the Ontario Hydro-Electric Commission. Such a scheme, however, would be less spectacular in its magnitude, but just as important. The people could manage to survive without electricity, but no community could progress without water and some measure of sanitation.

It is highly desirable that water should be furnished at the lowest rate possible, so long as the concern is self-supporting, and co-operative systems are advantageous to the public in this respect. But the constitution of the Hydro-Electric Commission is not sufficient in the case of waterworks for small towns, because it would be unwise to have two authorities as in the case of electricity. Moreover the water would generally be found locally. Suppose a number of towns and villages within a certain radius of a convenient centre were to agree to let an organization to furnish water, and if necessary treat the sewage, that organization would be in a position to finance better than individual small towns; it could buy equipment and construct works more cheaply; it could administer the concerns more economically for it could afford to employ better men; waste would be kept at a minimum for it has already been shown that it is costly to waste water; fire insurance would be reduced as the equipment would meet the requirement. It would cost but little more to operate the sewage work, if on the activated sludge process, because the air could be compressed at the water works station and delivered where it was required. Any town deciding later on to acquire its own water and sewage works could do so. In general the scheme could be made sufficiently flexible in its constitution. The foregoing is submitted in its crude state for the consideration of those interested in the promotion of public health works.

RELATION OF THE GENERAL PRACTITIONER TO THE TUBERCULOSIS PROBLEM

Presented as a Part of the Symposium on Tuberculosis at the Academy of Medicine, November, 1915.

IF ONE SHOULD wish to condense, I think it would be sufficiently comprehensive to say that in addition to his medical supervision of the patient who seeks his advice for tuberculosis, the physician should look upon every case as a part of a great public health problem.

The patient is suffering from various symptoms from which he seeks relief, but the physician's duty should not end in his attempts to secure this relief. This patient is a possible source of infection from which others must be guarded, while already he may have been responsible for infection of some of those about him. He is himself a victim of infection from a source which the physician should endeavor to place, while effort should also be made to discover any others who may have received an infection from the same source. If every case discovered were worked out thoroughly along these lines, we should within one or two generations find tuberculosis a comparatively rare disease.

Many cases, however, come under our notice where most careful inquiry fails to find any probable source of infection.

We are reminded, also, and very frequently, that patients with slight tuberculosis lesions recover, and even those with rather extensive disease will now infrequently recover. This is due to inherent or acquired resistance.

Another duty of the physician must be to inoculate in the families of the tuberculous a firm belief in the value of good health and righteous living in lessening the possibility of development of tuberculosis in those exposed to possible infection. Where the physician cannot prevent contact with the potentially infective patient, he can materially lessen the probability of disease developing in the contact cases by proper instruction in rational living. The Department of Public Health have devised a system of following up all contact cases amongst the poor, with some truly remarkable results in the discovery of unsuspected cases. The best work has perhaps been done amongst children, as they can readily be induced to present themselves for examination, while in the adult poor co-operation is less readily secured in the absence of symptoms in the contact cases.

I believe the Health Department have been pleased with the growing co-operation of the physician in the public health side of tuberculosis.

The next step is to make sure that the physician will undertake similar work amongst his paying patients. The moment the profession will make a general move in devising and strongly insisting upon the careful physical examination of all contacts, a marked advance will have been made. And as latent foci may become active in a short time, or infection within an organ, especially the lung, spread gradually without suspicion on the part of the patient, our progress in the campaign against tuberculosis will not be what it should be until we can convince the families under our care of the material advantages of periodic health examinations. Only a few days ago, a young man, who had supposed himself to be in perfect health, called on me for advice. He told me that while spending a few days with a relative at a well known health resort in New York State, he was informed that it was a rule that all guests must submit to a physical examination. He was astonished when told that he had pulmonary tuberculosis. He was a student in our University with general health good, yet he had a lesion involving one-third of his right lung; there

was no cough, but he had a slight morning expectoration containing tubercle bacilli in abundance.

There is an important type of case to whom much attention must be given—the carrier. We know the typhoid carrier, the diphtheria carrier, who, suffering no subjective symptoms, and not ill, yet disseminates infection. So, too, we have the tubercular carrier; the man with chronic cough, his disease under arrest, perhaps extensive, yet able to go to work daily, this condition present for a variable period of time, from months to years, expectorating more or less promiscuously—a terrible menace to the community in which he lives. Because of the distances covered by him, the many contacts and the slow development of tuberculosis infection into the demonstrable stages, we cannot measure the mischief for which he is responsible, as we can in the case of the typhoid or diphtheria carrier, yet is he none the less dangerous and a foul fountain head whose stream we should endeavor to check, or at least direct into harmless channels.

The attitude of the physician should be, and I think in Toronto, generally speaking, is, one of hearty co-operation with our Medical Health Department in their excellent organization for effective work amongst the tuberculous poor.

We should endeavor to carry out in our individual practice, similar work amongst those under our care. They should, at least, be as well advised and safeguarded as the city's poor.